

12. *On the FOSSIL MAMMALIA of MARAGHA, in NORTH-WESTERN PERSIA.*  
By R. LYDEKKER, Esq., B.A., F.G.S., &c. (Read January 27, 1886.)

THE fossil Mammalia of Maragha, a village situated some distance due south of Tabriz, in north-western Persia, have formed the subject of several notices by German writers, foremost among whom are Messrs. Grewingk \*, Pohlig †, and Rodler ‡. As Dr. Pohlig, who has communicated a paper to the Society which will be read this evening, is, I believe, about to write a monograph on the Maragha Mammalia, I do not in any way wish to interfere with or unduly forestall his work; but since a collection of these remains has been sent to the British Museum by Mr. R. Damon, F.G.S., with a view to their being purchased by that institution, in which case it would fall to my lot to describe them in the Museum Catalogue, and since the specific determination of the Maragha Mammalia is a matter of considerable importance in relation to the western limits of the Siwalik fauna of India (the description of which I am just bringing to a conclusion), I have ventured to lay a few notes on the Maragha Mammals before the Society, and hope that my German *confrères* will regard them as an endeavour to assist, rather than to mar their work.

Dr. Grewingk, in the paper cited, recorded the following forms, viz.:—*Helladotherium*, sp., *Tragoceros*, sp., *Bison bonasus*, *Cervus elaphus*, *Equus caballus*, *E. onager*, *Hipparion*, sp., *Rhinoceros antiquitatis* §, *R.* sp., *Elephas primigenius*, and *Mastodon* (?), sp. It was left an open question whether the existing and Pleistocene forms were contemporaries of the others; but it was concluded that the older forms indicated the representatives of the Lower Pliocene Pikermi beds. Dr. Pohlig mentioned *Tragoceros* and other large antelopes, *Cervus* and allied forms, *Hipparion* and perhaps another small equine, *Rhinoceros* or *Aceratherium*, *Elephas* or *Mastodon*, and an *Hyæna* which was thought to be probably identical with the Pikermi *H. eximia*. Dr. Rodler, in addition to the forms already mentioned, recorded the Pikermi *Gazella deperdita* ||, and *Palæoreas Lindermayeri*, as well as species of *Antidorcas* and *Sus*. He identified the *Hipparion* with *H. gracile*, and considered that an *Equus* and probably a species of *Elephas* occurred in the same beds. The typical Maragha fauna was regarded as of Pliocene age; but the existence of an associated Pleistocene fauna was considered as not improbable. To the above-mentioned Pikermi forms the specimens sent to the British Museum apparently add *Giraffa attica* ¶ and *Palæoryx Pallasii*; and they also indicate that the *Sus* is apparently *S. erymanthius*, the *Mastodon* is *M. pentelici*, and the

\* Verh. k.-k. geol. Reichsanst. 1881, p. 296.

† *Ibid.* 1884, pp. 281–284.

‡ *Ibid.* 1885, no. 14, p. 333.

§ Syn. *R. tichorhinus*.

|| Syn. *G. brevicornis*.

¶ Syn. *Camelopardalis attica*.

*Helladotherium*, *H. Duvernoyi* (which is probably common to the Pikermi beds and the Siwaliks \*), while they confirm the suggested identity of the *Hyæna* with *H. eximia*. They point moreover to the presence of *Felis brevirostris* of the Upper Pliocene of the Auvergne; to a species of *Rhinoceros* (which may or may not be identical with the one identified by Dr. Grewingk with *R. antiquitatis*) apparently intermediate between *R. antiquitatis* and the Siwalik *R. platyrhinus*, which is not improbably an ancestral form of the former; and also to *R. Blanfordi* †, which was first recorded by myself ‡ from the north-western frontier of India §, and has been subsequently described by Dr. Ernst Koken || from the (probably) Pliocene of southern China, where it occurs in association with *Mastodon*, *Tapirus*, *Hipparion*, *Chalicotherium*, *Giraffa*, *Hyæna*, &c. This last species appears, therefore, to have ranged from north-western Persia through Baluchistan, the Punjab, and thence, probably *viâ* Tibet ¶, to China.

From strata of unknown age at Erzerum, in Armenia, Dr. Falconer many years ago described some elephant molars under the name of *Elephas armeniacus*; and as Erzerum is comparatively near to Tabriz, it may be suggested that some of the Maragha elephants' teeth may not improbably belong to this species; but be this as it may, the Erzerum and Maragha faunas may be geographically grouped together. There is in the British Museum an elephant's molar from China (No. 29007), which has been suggested to belong to this species; and if this were correct it would seem that the range of *E. armeniacus* was somewhat the same as that of *Rhinoceros Blanfordi*, *i. e.* that it extended from western Asia through the regions lying to the north of India to China; I am, however, disposed to refer the specimen to *E. namadicus*. The structure of the molars of *E. armeniacus* is such that this species might well have been an ancestral form allied to both *E. primigenius* and *E. indicus*; and its geographical distribution is such as to harmonize with this view.

Putting aside on the present occasion the Pleistocene and existing species recorded by Dr. Grewingk from Maragha, the majority of the other members of the Maragha fauna agree so closely with the fauna of the Pikermi beds that there can be no hesitation in adopting the views of the German palæontologists as to the one fauna being the representative of the other. The occurrence, however, of *Felis brevirostris* in the Maragha beds, coupled with the suggestion that *Elephas armeniacus* may also be found there, together with the now well-ascertained fact that the older mammalian types survived in Asia long after they had disappeared from Europe, renders it not

\* See 'Cat. Foss. Mamm. Brit. Mus.' pt. ii. p. 71 (1835).

† Syn. *Aceratherium Blanfordi* ¶, I propose for the future to include *Aceratherium* in *Rhinoceros*.

‡ Palæontologia Indica, ser. 10, vol. iii. p. 2 (1884).

§ Dera Búgti in Baluchistan, and the Búgti Hills to the north of Jacobabad in Sind.

|| Pal. Abhandl. vol. iii. pt. 2, p. 18 (1885).

¶ This may be the *Rhinoceros* recorded by Falconer and Cautley from Hündes in Western Tibet.

improbable that the age of the Maragha beds may be somewhat later than the Lower Pliocene. This suggestion is perhaps confirmed by the occurrence at Maragha of *Rhinoceros Blanfordi*, which, in Baluchistan and Northern Sind is met with in the Lower Siwaliks, accompanied by a variety of *Mastodon angustidens* (characteristic of the Middle Miocene of Europe), *Hyopotamus*, and *Anthracotherium*, the age of the Lower Siwaliks being certainly not later than the Upper Miocene, and not improbably being Lower Pliocene. As the accompanying older forms are apparently not found at Maragha or in the Pliocene of northern China, where *R. Blanfordi* is again met with, it is most probable that the Maragha beds are of later age than the Lower Siwaliks.

One of the most interesting and important points connected with the Maragha deposits is the proof afforded that the Pikermi fauna, which has been traced as far northwards as Hungary, extended to the north-western extremity of Persia, where it came in contact with one member of the extreme western branch of the Siwalik fauna of India, which branch differs widely from the more eastern portion of that fauna, and exhibits a much more strongly marked Palæartic *facies*. The same member (*Rhinoceros Blanfordi*) connects the Erzerum-Maragha fauna with that of northern China, which is known to be in great part Oriental (Siwalik), and will not improbably prove to be in part Palæartic. The apparent occurrence of the Pikermi species of *Helladotherium* at Maragha is important as confirming the provisional identification of the Siwalik species of that genus with the former. Another feature calling for especial notice is (with the foregoing exception) the apparent absence of eastern Siwalik forms from the Maragha fauna; and although subsequent finds may, and very probably will, bring to light some common forms\*, yet this absence appears to be so marked that it seems to suggest that even in Pliocene times there was a decided division, so far as species are concerned, between the faunas of the Palæartic and Oriental regions, where the two came in contact on the north-western frontier of India. If this view be borne out by future observations, it would further suggest that some of those genera at present characteristic of the Ethiopian region which are found in the Siwaliks and are at present unknown elsewhere (*e. g.* *Cynocephalus* †, *Alcelaphus* ‡, and apparently *Strepsiceros* §, *Hippotragus* ||, and *Cobus* ¶) did not make their way into Africa *via* northern Persia and Syria, but may have passed through southern Baluchistan and Persia, and thence across the gulfs of Oman and Aden, on a line connecting the present Oriental and Ethiopian regions. Other modern Ethiopian genera, however, like *Giraffa* and *Hippopotamus*, are known to have ranged over the northern Oriental and the southern Palæartic regions in

\* The apparent affinity of *Mastodon pentelici* to the western Siwalik *M. pandionis* is very noteworthy; but adult molars of the former are required before their full affinity can be determined.

† See 'Cat. Foss. Mamm. Brit. Mus.' pt. i. p. 4 (1885).

‡ *Ibid.* pt. ii. pp. 55, 56 (1885).

§ *Ibid.* p. 47.

|| *Ibid.* p. 49.

¶ *Ibid.* pp. 53, 54.

Pliocene and Pleistocene times, while the distribution of *Struthio* may be traced almost continuously from the Siwaliks, through Baluchistan and Persia, to Syria and Africa \*. The suggested relation of the Erzerum-Maragha fauna (through the unnamed *Rhinoceros*) with the Pleistocene fauna of the northern Palæarctic region, and (through *Elephas armeniacus*) with the existing Oriental fauna, have been already discussed; and the writer concludes this notice of the Erzerum-Maragha fauna with the expression of the hope that the labours of the German palæontologists will reveal more fully the relations between the Pliocene fauna of the Palæarctic and Oriental regions which the Maragha deposits give promise of illustrating.

For the discussion on this paper see p. 181.

\* See 'Palæontologia Indica,' ser. 10, vol. iii. p. xxiv. (1886).